Solar Eclipse of December 22nd, 1870.

By J. B. Dancer, F.R.A.S.

Lat. 53° 28′ 21″·75 ; Long. $0^h\ 8^m\ 52^s{\cdot}47$ W.

The eclipse of the Sun, on Thursday, the 22nd of December, was favourably observed here. Although a slight haze prevailed, all the details of the phenomenon were distinct, and tolerably well defined.

A number of spots were visible on the Sun's surface, two of which were of some magnitude. The nuclei of these spots were linked together by maculæ, and surrounded by a penumbra which extended to a considerable distance. Faculæ also were very numerous and distinct.

The times of contact taken by a chronometer carefully corrected to Greenwich mean time were as follows:—

	h	m	s
First contact of the Moon's Limb with the Sun ..	11	5	49
Contact of Moon's Limb with nucleus of the first large spot	11	31	36
With the nucleus of the second large spot	11	37	20
Last contact of Moon's Limb with the Sun	1	37	3

The temperature during the progress of the eclipse was taken at intervals by a mercurial thermometer with a black bulb in vacuo, exposed to the Sun at the height of 4 feet from the ground.

Time.	Temperature.	Time.	Temperature.
h m s	°	h m s	°
11 10 0	31·5	12 22 0	27·2
35 0	30·25	35 0	28·5
45 0	29·75	1 37 0	29·0
50 0	29·25		

By reference to the table of temperature it will be seen that at the time of the greatest phase the temperature was 4°·3 lower than at the commencement, and that the thermometer had risen 1°·8 at the time of last contact. A thin covering of snow was on the ground at the time.

I had an impression that the Moon's limb could be traced a short distance from the Sun's disk at the upper and lower points of contact. The black surface of the Moon, when projected on the Sun's disk, appeared very uniform in colour, and darker than any of the spots.

Immediately after the last contact I tried with powers of 80 and 180, to distinguish the Moon's disk, but did not succeed. Light clouds were passing over the Sun and Moon at this time.

The diminution in light was quite perceptible at the time of the greatest phase. Telescope employed with $4\frac{1}{4}$ inches object-glass, with powers of 80 and 180.

Old Manor House, Ardwick, Manchester.

Solar Eclipse of December 21–22, at Mr. Bishop's Observatory, Twickenham. By W. Plummer.

The following times were observed with a power of 70 on the 7-inch Equatoreal as high a one as could be advantageously employed.

	h	m	s	
First contact, Dec. 21,	23	6	28·87	Twickenham M.T.
Last contact, Dec. 22,	1	40	32·72	„ „

The longitude of the Observatory is $1^m\,13^s\cdot10$, west of Greenwich.

Observing with the comet-seeker, by Pistor and Martius, Berlin, Mr. Hind noted the first contact $0^s\cdot6$ later.

Solar Eclipse of December 22, 1870, visible as a partial one at Armagh. By the Rev. T. R. Robinson, D.D.

It was observed with a 7″ achromatic by Cauchoix, power 75, and the times were recorded by a chronograph of Krille.

	Armagh M.T. h	m	s
Beginning of Eclipse	10	33	53·43
First limb on first of two large spots ..	10	58	24·70
First limb on a spot high in field	11	2	26·44
First limb on second of two large spots ..	11	4	10·55
First limb on second of small group ..	11	32	30·18
Second limb on second of two large spots ..	11	59	56·29
Second limb on upper spot	12	18	30·62
End of Eclipse	1	3	37·55

Observatory, Armagh.
